DELAWARE CENTER FOR THE INLAND BAYS

Inland Bays Journal

FALL 2017

Uncovering the Mysteries of the Horseshoe Crab

By: Andrew McGowan

Often called a "living fossil", the eggs of the prehistoric-looking Horseshoe crab are a critical food source for the endangered Red knot, gulls, crabs, and juveniles of many fish species. Horseshoe crabs also are used as bait for commercial eel and conch fisheries, and their unique blue blood is harvested for use in the biomedical industry. Roaming bays during the spring and summer, horseshoe crabs live mysterious lives for the rest of the year.

Juvenile horseshoe crabs spend their first two years within estuaries like the Inland Bays, and older crabs may remain in the estuary or migrate to the ocean. While the geographic distribution of our Atlantic horseshoe crab species, *Limulus polyphemus*, extends from Maine to the Yucatan Peninsula, research suggests that the crabs in southern portions of this range are a distinct population.

Even within the mid-Atlantic region, horseshoe crabs in Chesapeake Bay are genetically different than those in Delaware Bay. Studies in New England found that most crabs reside year-round within a single coastal lagoon, pointing to the crabs' preference to stick close to home.

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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The CIB is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inform citizens and visitors to the Inland Bays watershed about this "estuary of national significance."

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DEAR FRIENDS OF THE BAYS,

Events throughout the summer and fall have continued to highlight huge public support for the Inland Bays and the protection of water quality. From the **Rally for Clean Water** in June to **Decked Out** in August and, most recently, **Coast Day** at UD's Lewes Campus in October, thousands of citizens have turned out in recent months to show their support for the Inland Bays and the protection of water quality.

The unsung heroes making these events happen are our enthusiastic, dedicated volunteers. These passionate individuals act as force multipliers; they work with CIB staff to accomplish our goal of creating clean, fishable, swimmable Inland Bays by providing the human power that makes events happen and spreads the word about the Center's accomplishments.

OUR VOLUNTEERS ARE AMBASSADORS FOR THE BAYS. On October 1, the University of Delaware SeaGrant program hosted Coast Day in Lewes. Coast Day is an annual celebration of the efforts led by SeaGrant and their partner organizations to research and protect coastal environments. The day involves displays, presentations, and hands-on activities for all ages. This year, it attracted approximately 7,000 people from around the state!

The Center's display at Coast Day featured our Living Shorelines initiative. Living Shorelines are an alternative to traditional shoreline management (bulkheading or rip-rap) that stabilize shorelines while providing valuable habitat and other ecosystem services. Over 15 volunteers staffed this exhibit, discussing the benefits of Living Shorelines with the public. Some of these volunteers have been working with for the Center for over a decade while for others this was their first volunteer experience. Some even came from as far away as Washington, DC and New Castle, DE to lend a hand!

Every year, we celebrate our volunteers and honor outstanding individuals and partner organizations with our Friend of the Bays awards in September (see "Meet the 2017 'Friend of the Bays' Award Winners," p. 7). This year's group was truly exceptional and we thank you all for your hard work!

If you have ever thought about volunteering but were unsure where to start, please reach out to us by emailing volunteer@inlandbays.org or by clicking "Get Involved" at the top of our website. We love welcoming new people into the CIB family. And, it could be you winning a "Friend of the Bays" award next year!

Sincerely,

Chris Bason
Executive Director

CIB MISSION

To preserve, protect and restore Delaware's Inland Bays, the water that flows into them, and the watershed around them.

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The James Farm Master Plan: Improving Access and Experience

by Bob Collins

The James Farm Ecological Preserve is a local gem: a 150-acre oasis of natural habitat with winding trails and diverse wildlife.

Owned by Sussex County and managed by the Delaware Center for the Inland Bays, this site serves as the focal point of the Center's education efforts, and is used to develop community understanding and support for the Inland Bays watershed.

The James Farm trails and beach provide valuable recreation to thousands of visitors each year!

Back in 1992, the land was donated to Sussex County by the late Mary Lighthipe, a descendant of the James family who had farmed the land for generations. Made in memory of her of her late son, Harold, the donation was given on the condition that the property be maintained exclusively for educational and recreational activities.

When the Preserve's facilities were installed in 1998, Sussex County's explosive population growth was not anticipated. The Preserve's popularity has highlighted the need to plan for growth while protecting the Preserve's ecosystems.

The James Farm Master Plan was developed in 2014 to address habitat restoration, improvements, and management of the James Farm with consideration for future population increase and sea level rise. This plan will help us keep Mary Lighthipe's dream alive by allowing safe accommodation for more visitors, providing improved experiences for visitors, and offering expanded educational programs.

Of course, in order to implement this Plan, extra funding is necessary. The Sussex County Council has contributed significant funds to the project and the Center currently has a number of pending requests for support and several donations from local organizations, businesses and individuals in support of the project.

However, we still need your help! If you appreciate the James Farm Ecological Preserve, please consider making a donation to the Center earmarked for the implementation of the James Farm Master Plan. For more information and to make a donation, visit inlandbays.org/masterplan or call 302-226-8105 x 108.

Implementation of the Plan will be conducted in two phases:

Phase 1: Address the pressing need for enhancement of the entrance and welcome area, including:

- New entrance signage and driveway
- Expanded parking facilities with a safe bus drop-off area for students
- Enhance and enlarge the special event lawn
- Improve launch points into the trail system

Timeline: The design and engineering work has already been completed and first phase construction is anticipated to begin in spring/summer 2018.

Phase 2: Address educational needs and enhance visitor experience, including:

- Additional educational gathering, seating, and teaching spaces that are separated from maintenance facilities;
- Improved storage facilities for education and maintenance equipment;
- A permanent restroom facility;
- Trail improvements including the relocation or renovation of failing boardwalks;
- 18 educational signs focused on the natural history and processes of the Preserve
- Additional welcome area amenities, including a donor recognition wall.

Timeline: Planning for this phase is also anticipated to begin in spring/summer 2018.

Making Strides with Stormwater Treatment

by Dr. Marianne Walch

Nutrient Pollution is the most important problem currently facing our Inland Bays. The *2016 State of the Bays* report found that nitrogen inputs exceed healthy limits in all three Inland Bays, and that phosphorus inputs to Indian River Bay are nearly double the limit for a healthy bay ecosystem.

Most of this nutrient pollution comes from 'nonpoint sources,' which include fertilized lawns, septic systems, and stormwater runoff. With the rapid development occurring in the Inland Bays watershed and the resulting increase in parking lots, roads, and roofs (impervious surfaces that prevent rainwater from soaking into the ground), stormwater runoff has increasingly become a contributor to the degradation of water quality in the Bays.

As stormwater flows over land, it carries pollutants into creeks and—eventually—the Inland Bays. In 1990, Delaware enacted stormwater management regulations that require developers to include Best Management Practices (BMPs) to control and treat runoff. Communities built prior to this regulation, however, were not required to treat stormwater, and are now a major source of local polluted runoff.

To address this, the State developed an Inland Bays Pollution Control Strategy (PCS), which set a goal of creating stormwater BMP retrofits to treat 4,500 acres of land in the watershed that was developed before 1990. Unfortunately, little progress has been made toward this goal. Since the PCS and accompanying regulations were finalized in 2008, only 101 acres of the watershed had received stormwater retrofits.

Because dedicated funding for these projects is necessary, partnerships with towns, community groups, and advocates like the Clean Water Delaware Campaign are essential to meeting our own PCS goals for the Bays, as well as cleaning up waterways throughout Delaware.

Currently, the Center is working with partners to install more stormwater retrofit projects as resources allow. Recent and ongoing projects will add 36 acres of treated land toward the PCS's goal. These acres will reduce nitrogen and phosphorus inputs to the Bays by nearly 58 and 16 pounds per year, respectively. The projects also help to reduce flooding, add habitat for native plants and animals, and provide beautiful spaces to the communities—a win for both our partners and the Bays!

STORMWATER PROJECTS

- **Dewey Beach Stormwater Master Plan**—Intense development in the Town of Dewey Beach has led to increased stormwater runoff and localized flooding which delivers nutrients and other pollutants directly into Rehoboth Bay.

  The Town recently partnered with the Center to develop a Stormwater Master Plan which provides specific recommendations for over 40 stormwater BMPs and living shorelines that will decrease runoff, reduce flooding, and improve water quality in Rehoboth Bay.

- **Read Avenue Stormwater Management and Living Shoreline**—A DNREC Community Water Quality Improvement Grant was awarded to the Center in August 2017 for an integrated stormwater management/living shoreline project at Monigle Park in Dewey Beach. This will reduce flooding on Read Avenue, stabilize the shoreline, and enhance shellfish and wetland habitats. Partners include the Center, the Town of Dewey Beach, and the Delaware Department of Transportation (DelDOT).

- **Stockley Center Stormwater Pond Retrofit**—To protect water quality in Cow Bridge Branch (a tributary that flows into Indian River Bay), a failing stormwater pond was recently upgraded to a bioretention facility. Runoff now soaks into the ground where native plants, soil, and mulch can filter pollutants and capture sediment. Biochar, an activated carbon, also removes nitrogen pollution. This project protects one of the healthiest streams in the watershed.

- **Anchorage Canal Stormwater Pond and Wetland**—DelDOT, Sea Colony, and the Center are partnering to construct a stormwater treatment facility in an area of state-owned right-of-way along Route 1, just north of South Bethany. This will reduce the pollutant loads to the Anchorage Canal and Little Assawoman Bay. The design includes a combined pond and wetland to remove pollutants from the runoff from a 7-acre drainage area. The facility will also feature a pedestrian/bicycle path and landscaping with native plants. This is the sixth, and last, major project in the 2008 Anchorage Canal Stormwater Retrofit Demonstration Initiative, demonstrating a variety of coastal stormwater retrofit tactics, with a focus on low cost solutions and native coastal vegetation.

Be a *Friend of the Bays* this Giving Season

by Steve Maternick

$118,617

Donations received
October 2016–September 2017
from 350 *Friends of the Bays*.
THANK YOU!

As a not-for-profit organization, the Delaware Center for the Inland Bays relies on multiple sources of revenue to sustain operations. From federal, state and local government grants to private donations, no amount is insignificant when it comes to preserving our Inland Bays. After all, when we come together, we can make profound changes.

Our donors are very special to us. Many give annually—and some even monthly!—providing the Center with a steady flow of funds that enables us to preserve, protect, and restore the Inland Bays through a combination of research, education, and restoration programs throughout the watershed.

No matter the amount, a financial contribution is always appreciated and will designate you as an honorary "Friend of the Bays." We hope you will continue to be (or become) a Friend by making a contribution to the Center during this upcoming holiday giving season.

Become an honorary "Friend of the Bays":

Donate Online

Visit inlandbays.org and click on the blue "Donate" button, then the "Donate Online" button and fill out our secure online donation form. (For a simple experience, please make sure you're using the latest version of one of the following secure web browsers: Microsoft Edge, Chrome, FireFox, or Safari and make sure your popup blocker is turned off.)

Donate by Mail

Use the donation envelope found inside this issue of the Inland Bays Journal and complete the information requested, then return it with your credit card information or a check made out to "Delaware Center for the Inland Bays".

Donate by Phone

Call 302-226-8105 ext. 108 and request a donation by phone. We will process your credit card donation directly through our safe and secure payment system.

Tribute Gifts

Donating in Honor or Memory of a friend or loved one can be a meaningful way to recognize special occasions or to remember a life well-lived. Be sure to include the name of the person being honored or remembered and the name(s) and address of those to be notified of your gift.

Recurring Donations

Want to make a bigger impact? Donate monthly. Consider setting up a $10 or more monthly credit card donation. For online donors, be sure to check the box that says, √ "show my support by making this a monthly donation." For those contributing by mail, simply indicate "monthly donation" when submitting your credit card information.

Legacy (Bequest) Gift

Want to make a huge impact? Include the Center for the Inland Bays in your Estate Plan. A simple way to do this is to designate a portion of your estate, either a percentage or a specific dollar amount, to the Center. This can be done by adding a codicil to your Last Will and Testament or adding the Center as a beneficiary when you next update your will. There can be tax advantages to doing this, so check it out with your tax and/or financial advisors. You can also call the Center's Development Coordinator for more information.

(Horseshoe Crabs continued from page 1)

A protected species, Horseshoe Crabs are managed by the Atlantic States Marine Fisheries Commission, which sets harvest limits from the Delaware Bay region (New Jersey through coastal Virginia). In order for this management strategy to work, agencies must better understand the spawning and migration patterns of horseshoe crabs. Until now it has been unclear where crabs from the Inland Bays go after spawning.

Since 2002, the Center has partnered with the United States Fish and Wildlife Service's Cooperative Tagging Program to figure this out through a "mark and recapture" study. As part of this program, volunteers place small circular tags on horseshoe crabs that spawn in the Inland Bays, noting the tagging location, sex of the crab, size, and approximate age. Each tag has a unique ID number along with a telephone number or website to report it. To date, Center staff and citizen science volunteers have tagged a total of 5,568 horseshoe crabs!

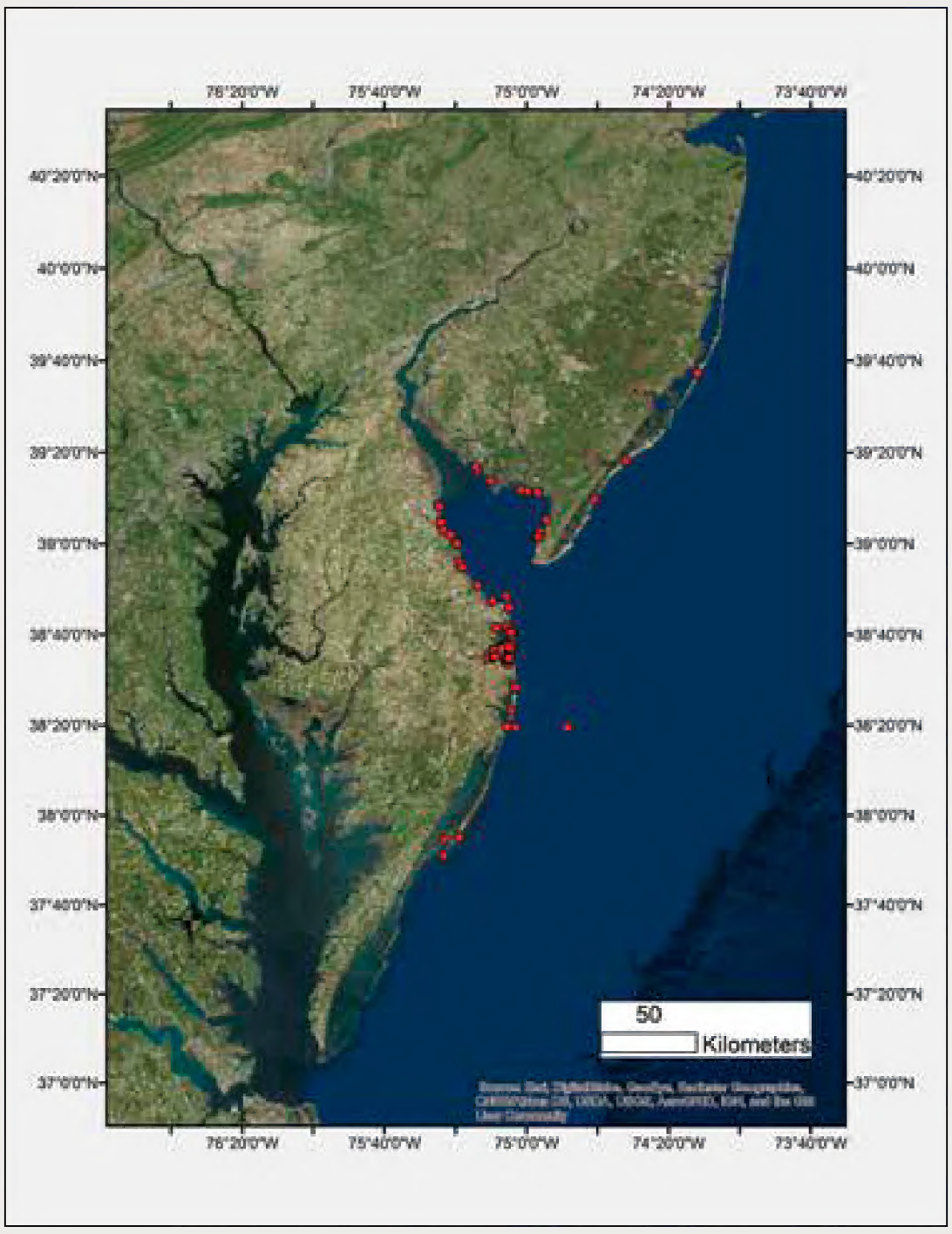
Of the crabs tagged in the Inland Bays, over one thousand have been resighted and reported to the U.S. Fish and Wildlife Service and have been seen as far south as the Chincoteague Inlet in Virginia and as far north as Connecticut. Migrations over 60 miles, however, were very rare and the overwhelming majority of crabs stayed within the Inland Bays and Delaware Bay.

This tagging study has demonstrated that a tremendous amount of mixing among horseshoe crabs occurs between the Inland Bays and Delaware Bay, with some crabs even switching locations! In fact, 55% of resighted crabs that were tagged in the Inland Bays have been reported living in the Delaware Bay. Most importantly, the Center's work shows that our Inland Bays horseshoe crabs are a critical part of the Delaware Bay region's population. The data collected can assist fisheries managers in making decisions about stock levels and harvests on the mid-Atlantic coast.

Horsecrab and eggs

YOU CAN HELP

You can help by reporting any horseshoe crabs found with a tag! Call the toll-free number printed on the tag: 888-LIMULUS, or report online at fws.gov/crabtag. You will be rewarded with a certificate containing release information, and a pewter horseshoe crab pin for the first one you report.



A subset of horseshoe crab resight locations (red dots). A large amount of mixing takes place between the Delaware Inland Bays and nearby bays like Delaware Bay and the Coastal Bays of Maryland.

Meet the 2017 "Friend of the Bays" Award Winners!

by Katie Young

On September 22, we presented three "Friend of the Bays" awards for excellence in volunteering, business support, and partnership aiding the Inland Bays. Meet the winners for 2017!

AB REAM

Ab was presented with the **Friend of the Bays—Volunteer award** for his work developing the "Oyster Master", a system the Center now uses to bag recycled oyster shell efficiently. Since implementing the device last year, the Center has been able produce over 2,000 oyster bags for use in living shorelines and oyster reefs!

TOWN OF DEWEY BEACH

Dewey Beach was awarded the **Friend of the Bays—Partner award** for their excellence in implementing the Inland Bays Comprehensive Conservation and Management Plan (CCMP). The Town has been a consistent supporter of the Center's Decked Out summer fundraiser. Most recently, the Town partnered with the Center to develop stormwater retrofit controls to reduce flooding in Dewey Beach and improve water quality in the Inland Bays.

GARY'S DEWEY BEACH GRILL

Gary's was the 2017 recipient of the **Friend of the Bays—Business award**. For several years, Gary's has been a generous partner of the Center. Not only have they opened their restaurant during the off season to host the Center's Holiday Parties, but they have also brought in nearly $13,000 to preserve, protect and restore the Inland Bays through their 2015, 2016, and 2017 Gary's Dewey Beach Brewfest events. In addition, the restaurant's co-owner and namesake, Gary Cannon, serves on the Center's Citizen's Advisory Committee (CAC) which brings Bay-related issues of public concern to the Center Board of Directors.

Thank You for Your Time and Effort!

The Center wants to take this opportunity to sincerely thank the volunteers that worked with us throughout the past year. Whether you have joined us in completing citizen science surveys, planting forested buffers, reaching out to the public at an outreach event, or cleaning up the Bays, we value your support. With your help, we are able to accomplish so much more for our Inland Bays!

Thank you—sincerely—from the staff here at the Center for being on board with the Bays. We hope to work with you again in 2018!

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You helped raise $20,789 for the Inland Bays!

Visit www.inlandbays.org/deckedout for event photos, a list of food donors and more!